March 25, 2016

Montana Department of Environmental Quality
Federal Facilities & Brownfields Section
PO Box 200901
Helena, Montana 59620-0901

Attention: Mr. Patrick Skibicki, Environmental Science Specialist

Subject: Corrective Action Plan for Heating Oil Release Site Investigation
West Entrance Trailer #58
Yellowstone National Park West Entrance NPS Residential Area
West Yellowstone, MT
MDEQ Facility ID #16-10925, Release #1714
Terracon Project No: AJ167005

Dear Mr. Skibicki:

Terracon Consultants, Inc. (Terracon) appreciates the opportunity to present this Corrective Action Plan (CAP) for site investigation activities at the above-referenced site. This CAP was developed to complete tasks outlined in the Montana Department of Environmental Quality's (MDEQ) letter *Additional Investigation and Corrective Action Work Plan Required for the Petroleum (Heating Oil) Release at Trailer 58, near the West Entrance to Yellowstone National Park, West Yellowstone, Montana,* dated September 15, 2015.

A. PROJECT INFORMATION

The MDEQ issued a "No Current Corrective Action (Inactive)" letter to the National Park Service (NPS) for the West Entrance Trailer #58 facility in 1996, but petroleum contamination was still present in the site soil and groundwater at the time the Inactive letter was issued. The MDEQ has requested that additional investigation/corrective action be completed before a "No Further Corrective Action (Closure)" letter can be issued. Specifically, the MDEQ has requested the preparation of a Corrective Action Work Plan (CAP), the installation of three groundwater monitoring wells, soil and groundwater sampling/analysis, and the preparation of a Remedial Investigation Report.

B. SCOPE OF SERVICES

The purpose of this CAP is to complete the tasks requested by the NPS and outlined in the September 15, 2015 MDEQ additional investigation/corrective action letter.

Groundwater Monitoring Wells

One 2-inch diameter groundwater monitoring well will be installed in the former valve box excavation area located south of Trailer #58. This monitoring well will be considered a replacement for monitoring well WY-1, which was formerly located 10 feet south of Trailer #58 and was abandoned in 1997. If apparent petroleum-impacted groundwater is encountered during the installation of the WY-1 replacement monitoring well, two additional 2-inch diameter groundwater monitoring wells will be installed down-gradient of the petroleum release source. The contingency wells are to be installed (if necessary) in the vicinity of the former monitoring wells WY-2 and WY-3, which were also abandoned in 1997.

Based on a review of well logs completed during the installation of the original WY-1, WY-2, and WY-3 monitoring wells (installed in 1993), we expect the subsurface profile to primarily consist of coarse sand and gravel. The soil borings for the wells will be advanced using a truck-mounted drilling rig, utilizing hollow stem auger equipment. A State of Montana-Licensed monitoring well driller will oversee the drilling and monitoring well installations and will register the wells with the Montana Groundwater Information Center. Based on information provided by the NPS, groundwater is expected to be encountered at approximately 44 feet below ground surface (bgs). At the direction of the NPS, the groundwater monitoring wells will be advanced to a maximum depth of 50 feet bgs.

Drilling equipment will be cleaned using a high-pressure washer prior to beginning the project and before beginning each boring. Non-dedicated sampling equipment will be cleaned using an Alconox® detergent wash and potable water rinse prior to commencement of the project and between collection of each sample.

Soil samples will be collected continuously using Shelby tubes or split spoon samplers to document lithology, color, and relative moisture content. In addition, the soil samples will be field screened using sensory methods and a photoionization detector (PID) to detect the presence of VOCs.

Monitoring wells will be constructed as follows:

- Installation of an expected 10 to 15 feet of 2-inch diameter 0.010-inch machine slotted PVC well screen at the bottom of the boring, spanning the groundwater surface, with a threaded bottom cap;
- Installation of 2-inch diameter, threaded, flush-joint PVC riser pipe to surface;
- Addition of pre-sieved 10/20 grade silica sand annular sand pack around the well screen from the bottom of the boring to approximately 2 feet above the top of the well screen;

- Placement of hydrated bentonite chips above the sand pack to approximately 2 feet bgs; and

- Installation of a 6-inch diameter, circular, steel, stick-up monitoring well cover (to extend at least 2 feet above the ground surface level) with a locking well cap inset in a, concrete well pad.

The monitoring wells will be developed by surging and removing groundwater until fluids appear relatively free of fine-grained sediment. Following development of the monitoring wells and after a sufficient recharge period, depth to groundwater measurements will be measured in each well. Prior to groundwater sample collection, each well will be purged with a new disposable bailer or low-flow sampling equipment. Each monitoring well will be purged of a minimum of three well casing volumes of groundwater, until the monitoring well formation fails to recharge, (i.e., well runs dry) or consistent values (i.e., less than 10% variance between consecutive readings) are obtained for pH, temperature and conductivity. Subsequent to sufficient recharge, one groundwater sample will be collected from each monitoring well utilizing low-flow sampling equipment and techniques.

Investigation Derived Waste

Drill cuttings and development groundwater will be stored temporarily on-site in labeled 55-gallon drums pending the results of the laboratory analyses. The drum labels will identify the apparent contents of the drum and the initial accumulation date.

Should the laboratory analyses show that the development water is not contaminated, it is expected that the water may be disposed of overland. It is expected that the drill cuttings will be transported off-site to be disposed of at a landfill, but the NPS may allow for the natural drill cuttings to be spread evenly at the site (pending laboratory analyses).

Sampling Program

Soil

One soil sample will be collected from each soil boring from the zone exhibiting the highest PID readings. If, based on these observations, no elevated PID reading is observed, the sample will be collected from the capillary fringe zone, from the interval exhibiting a change in lithology, from the bottom of the boring, or from the interval of most likely environmental impact as determined in the field by the sampling professional.

The soil samples will be collected and placed in laboratory-prepared containers, labeled, and placed on ice in a cooler which will be secured with a custody seal. The samples and completed chain-of-custody forms will be transported to the selected analytical laboratory for Standard (2 – 3 weeks) turn around.

Groundwater

One groundwater sample will be collected from each of the newly installed groundwater monitoring wells on the site using low-flow sampling equipment and techniques. Prior to sample collection, depth to groundwater will be measured in each well.

The groundwater samples will be collected and placed in laboratory-prepared containers, labeled, and placed on ice in a cooler which will be secured with a custody seal. The samples and completed chain-of-custody forms will be transported to the selected analytical laboratory for Standard (2 - 3 weeks) turn around.

Sampling Frequency

One soil and groundwater sampling event will be conducted during the local high groundwater level period (May – June) and an additional groundwater sampling event will be conducted during the local low groundwater level period (August sampling expected).

Laboratory Analytical Program

The soil and groundwater samples, including a QC field blank sample, will be analyzed for volatile petroleum hydrocarbons (VPH) and extractable petroleum hydrocarbons (EPH) screen. If the EPH screen concentration exceeds 200 milligrams/kilogram (mg/kg) in soil and/or 1,000 micrograms/L (µg/L) in groundwater, the sample must be further analyzed for carbon fractions. Soil and groundwater analytical methods and frequencies are summarized as follows:

Analysis	Sample Type	No. of Samples	Laboratory Method	Turn Around Time
VPH	Soil	Up to 3	Massachusetts Method	**Standard**
EPH Screen	Soil	Up to 3	Massachusetts Method	**Standard**
EPH Fractionation (if necessary)	Soil	Up to 3	Massachusetts Method	**Standard**
VPH	Groundwater	Up to 8	Massachusetts Method	**Standard**
EPH Screen	Groundwater	Up to 8	Massachusetts Method	**Standard**
EPH Fractionation (if necessary)	Groundwater	Up to 8	Massachusetts Method	**Standard**

Surveying

If the contingency monitoring wells are installed (three wells total), the wells will be surveyed to mean sea level elevation using an established United States Geological Survey (USGS) benchmark under the supervision of a Montana-licensed surveyor.

Preparation of a Remedial Investigation Report

Upon completion of the two planned groundwater sampling events and receipt of the laboratory analytical results; one Standardized Initial Remedial Investigation Report (Report RIR-01) will be prepared. The report will include the following:

- Documentation of field activities;
- Site plan showing pertinent site features;
- Monitoring Well Logs;
- Groundwater Contour Map (if contingency wells are installed);
- Analytical laboratory results;
- Data evaluation and presentation of findings; and,
- Recommendations concerning further action, if necessary.

C. SCHEDULE

Services will be initiated upon MDEQ approval of this CAP. Groundwater monitoring well installation, soil sampling, and the first groundwater sampling event are expected to be completed during the local high groundwater level period (May – June) and an additional groundwater sampling event will be conducted during the local low groundwater level period (August sampling expected).

The Remedial Investigation Report will be submitted to MDEQ on or before September 30, 2016 or within 45 days of receipt of analytical data from the last sampling event included in this scope of services. The written report will reflect final results, findings and recommendations, and, as such, will take precedence over any verbal reports that Terracon personnel may have provided. The analysis, comments, and recommendations presented in the written report will be based on the information collected and discussed in the CAP.

E. GENERAL COMMENTS

Terracon's services will be performed in a manner consistent with generally accepted practices of the professional undertaken in similar studies in the same geographic area during the same period. Terracon makes no warranties, expressed or implied, regarding its services, findings, conclusions, or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies, or other third parties supplying information used in the preparation of the report. These services will be performed in accordance with the scope of work agreed with you, our client, as set forth in this CAP and subsequent discussions with you.

We appreciate the opportunity to provide this CAP and look forward to continue working with you on this project. If you should have any questions or comments regarding this plan, please contact the undersigned.

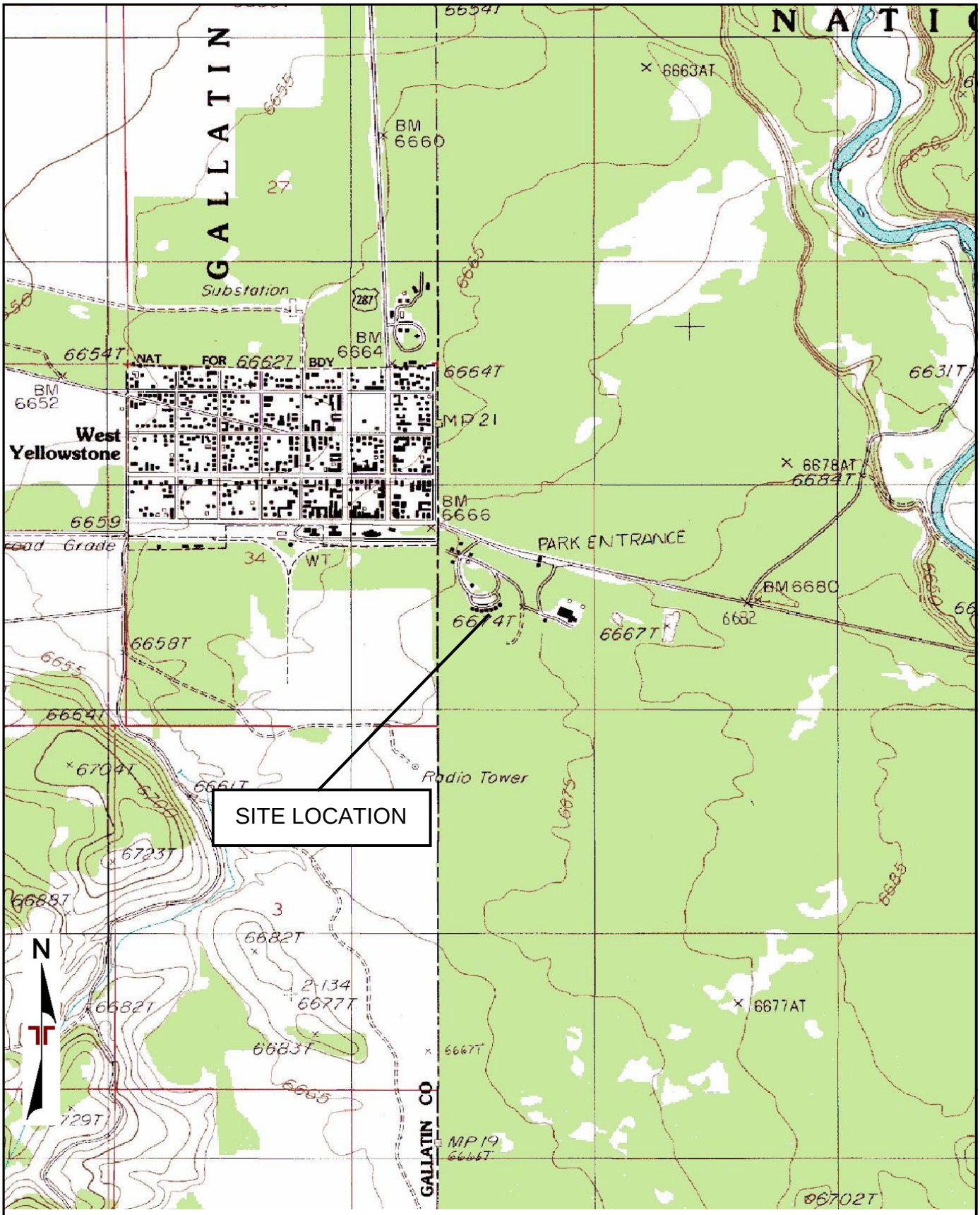
Sincerely,

Erik T. Hayes
Project Manager

Robyn R. Sargent, CHMM
Department Manager – Environmental Services

Attachments: Exhibit 1 – Topographic Map
Exhibit 2 – Site Diagram
MDEQ's *Additional Investigation and Corrective Action Work Plan Required for the Petroleum (Heating Oil) Release at Trailer 58, near the West Entrance to Yellowstone National Park, West Yellowstone, Montana,* dated September 15, 2015

Electronic copy: Tom McKenna, Yellowstone Construction Engineer, Yellowstone National Park
Chris Anderson, DJ&A, P.C.
Martin Oakland, DJ&A, P.C.



TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY
QUADRANGLES INCLUDE: WEST YELLOWSTONE, MT (1/1/2000).

Project Manager: ETH	Project No. AJ167005	Terracon 212 Zoot Way, Suite B Bozeman, MT 59718-5930	TOPOGRAPHIC MAP	Exhibit
Drawn by: ETH	Scale: 1"=2,000'		Heating Oil Release Site Investigation **West Entrance Trailer #58** **West Yellowstone, MT**	1
Checked by: RRS	File Name:			
Approved by: RRS	Date: March 2016			

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

Project Manager: ETH	Project No. AJ167005	Terracon 212 Zoot Way, Suite B Bozeman, MT 59718-5930	SITE DIAGRAM Heating Oil Release Site Investigation West Entrance Trailer #58 West Yellowstone, MT	Exhibit 2
Drawn by: ETH	Scale: AS SHOWN			
Checked by: RRS	File Name:			
Approved by: RRS	Date: March 2016			

DEQ
Montana Department
of Environmental Quality

September 15, 2015

Via Email and US Mail

Nancy Ward, Chief of Maintenance
Yellowstone National Park
PO Box 168
Yellowstone National Park, WY 82190-0168

Subject: Additional Investigation and Corrective Action Work Plan Required for the Petroleum (Heating Oil) Release at Trailer 58, near the West Entrance to Yellowstone National Park, West Yellowstone; Montana; Facility ID #16-10925; DEQ Release #1714

Dear Ms. Ward:

The Montana Department of Environmental Quality (DEQ) has reviewed the available information pertaining to the subject petroleum release and determined that additional corrective action is necessary before DEQ can send a No Further Corrective Action (Closure) letter for Release #1714.

On November 4, 1996, DEQ sent the National Park Service a No Current Corrective Action (Inactive) letter for Release #1714. Petroleum contamination was still present in the soil and groundwater at the time the Inactive letter was issued. Petroleum release sites with an Inactive status remain open on DEQ's database.

A groundwater investigation is required to verify if groundwater remains impacted as a result of Release #1714. Pursuant to Administrative Rules of Montana (ARM) 17.56.601, *et seq.*, **please submit a standardized corrective action work plan (CAP_RI-01) by November 30, 2015, that includes the following:**

- Installation of one 2-inch diameter groundwater monitoring well using a hollow-stem auger drill rig in the former valve box excavation south of Trailer 58. This monitoring well will be a replacement well for monitoring well WY-1. The monitoring well must be screened to account for seasonal high and low groundwater fluctuations.

- Installation of up to two additional 2-inch diameter groundwater monitoring wells if groundwater appears to be impacted by petroleum during installation of replacement monitoring well WY-1. The contingency monitoring wells must be installed downgradient of the petroleum release source, in the vicinity of former monitoring wells WY-2 and WY-3.

- A minimum of one soil sample must be collected from each soil boring and analyzed for volatile petroleum hydrocarbons (VPH) and extractable petroleum hydrocarbons (EPH) screen. If the EPH screen concentration exceeds 200 milligrams/kilogram (mg/kg), the sample must be further analyzed for carbon fractions. Soil samples should be collected

from the soil displaying the highest concentrations of petroleum contamination based on photoionization detector (PID) readings or from the soil/groundwater interface.

- Groundwater samples must be collected from each monitoring well following proper well development using low-flow sampling techniques and submitted to an analytical laboratory for VPH and EPH screen analysis. If the EPH screen concentration exceeds 1,000 micrograms/liter (µg/L), the sample must be further analyzed for carbon fractions. DEQ recommends using a bladder pump for groundwater sampling. A groundwater sample is not required to be collected from any well that contains light non-aqueous phase liquid (LNAPL or free product).

- Depth to water measurements must be measured in each monitoring well during the groundwater sampling event.

- If a three groundwater monitoring wells are installed, they must be surveyed by a Montana licensed surveyor to mean sea level elevation using an established USGS benchmark.

- A Remedial Investigation (RI) Report must be submitted within 45 days of receipt of laboratory analytical results. Please submit a standardized Initial Remedial Investigation Report (Report_RIR-01). Standardized reports can be found on DEQ's website: http://deq.mt.gov/LUST/TechGuidDocs/cap_reports.mcpx

You can implement the corrective action plan (CAP) after you receive DEQ's written notification that the scope of the CAP has been approved. If you have any questions, please call me at (406) 444-6452 or e-mail me at pskibicki@mt.gov.

Sincerely,

Patrick Skibicki
Environmental Science Specialist
Federal Facilities & Brownfields Section

Electronic copy: Nancy Ward, Chief of Maintenance, Yellowstone National Park
Jeff Kuhn, Manager, DEQ Federal Facilities & Brownfields Section
Patrick Skibicki, DEQ Federal Facilities & Brownfields Section
Tim Roark, Gallatin County Lead Sanitarian

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